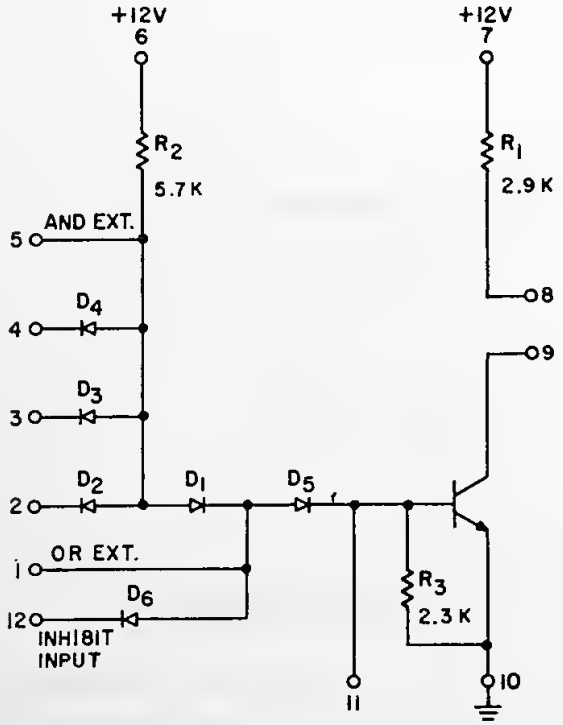
IBM INDUSTRIAL PRODUCTS

Functional Description

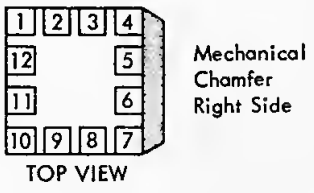
The AND OR Inverter, AOI-1C madule, cansists of a three diade positive AND circuit, fallowed by a diade OR and a saturating transistar inverter. The AOI-1C is capable af higher fan-out than the AOI-2C module. The OR functian can be accamplished by:

1. OR extending Pin 1 using an AOX-2C madule.
2. datting callectars (parallel cannected callectars) with ather madules -- only one callectar resistar is required.

Schematic

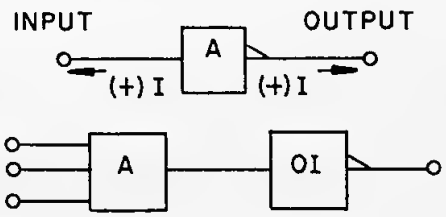


Terminal Configuration



PIN 11 LEAVE OPEN

Block Diagram



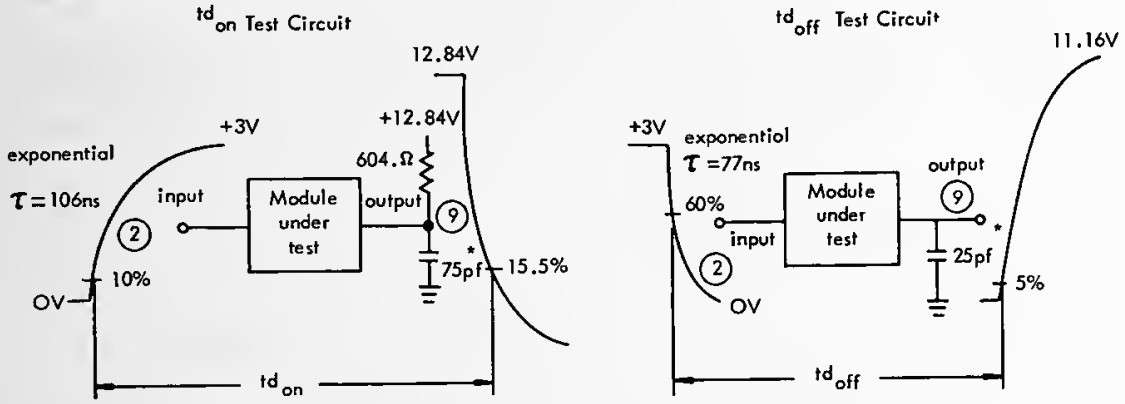
Maximum Ratings

Input Voltage = -13V
Output Voltage = 13V
I_E = 27 Milliamps

AOI-1C Module Functional Tests

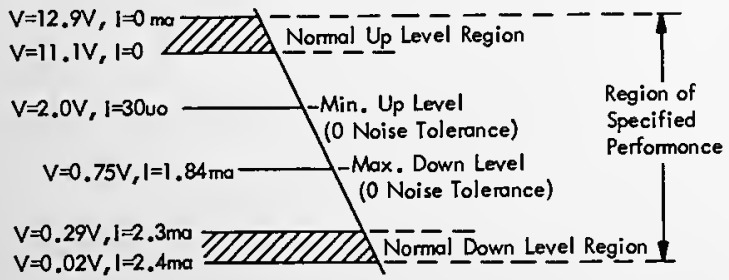
TESTS	TERMINAL CONDITIONS												°C	ADDITIONAL LOAD REQUIREMENTS	VARIABLE	UNITS MIN	UNITS MAX	UNITS
	1	2	3	4	5	6	7	8	9	10	11	12						
OC ON	-	2.20V	2.20V	2.20V	-	11.16V	12.84V	V_O	V_O	GND	-	-	25	21.0 ma CURRENT INTO TERMINAL 9	V_O		0.29	V
DC NOISE	-	0.95V	12.84V	12.84V	-	12.84V	11.16V	V_O	V_O	GND	-	-	25		V_O	2.0		V
DC NOISE	-	12.84V	0.95V	12.84V	-	12.84V	11.16V	V_O	V_O	GND	-	-	25		V_O	2.0		V
DC NOISE	-	12.84V	12.84V	0.95V	-	12.84V	11.16V	V_O	V_O	GND	-	-	25		V_O	2.0		V
DC OFF	-	12.84V	12.84V	12.84V	-	12.84V	11.16V	V_O	V_O	GND	-	GND	25		V_O	11.14		V
DC NOISE	-	-	-	-	1.47V	-	11.16V	V_O	V_O	GND	-	-	75		V_O	2.0		V
td_{on}		INPUT	-	-	-	11.16V	12.84V	V_O	V_O	GND	-	-	25/75	SEE td_{on} TEST	td_{on}	65/60	235	ns
td_{off}		INPUT	-	-	-	12.84V	11.16V	V_O	V_O	GND	-	-	25/75	1.4K BETWEEN PINS 5 & 6 SEE td_{off} TEST	td_{on}	160	710/860	ns

Test Waveforms

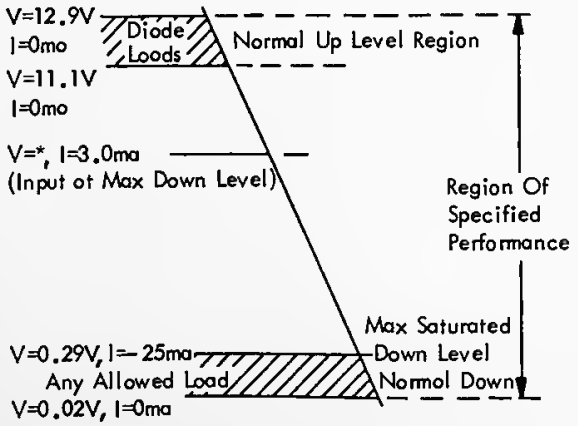


NOTE: 604Ω external resistor to simulate full load condition
* Including probe capacitance

Input Requirements



Output Specifications

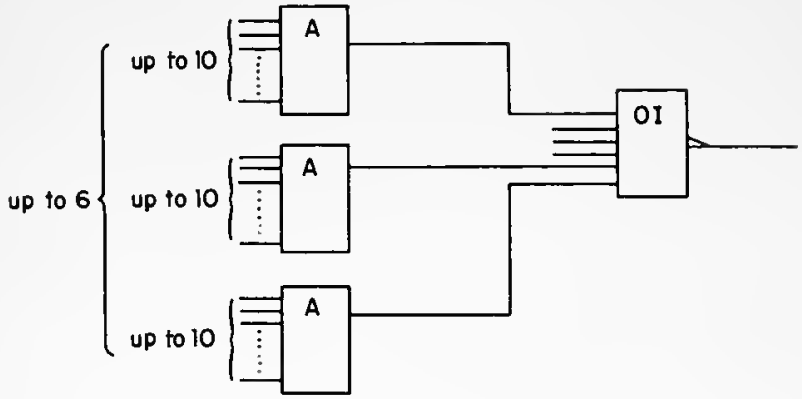


*Defined by collector load impedonce.

Fan In

AND = Total of 10 inputs

OR = Total of 6 woy OR's



Fan Out

Total collector current for the AOI-1C is 25ma

$25ma \geq I_{RC} + N_1 K_1 + N_2 K_2 + - - -$

I_{RC} = Tatal callector load resistor current

N_1 = Number af AOI-2C loods

N_2 = Number af AOI-1C loads

K_1 = 1.15mo- AOI-2C loading canstant

K_2 = 2.3ma - AOI-1C loading constant

To double the Fan Out, the autput callectars and inputs must be paralleled.

Maximum Power Supply Current Requirements

	ON	OFF
+12V	6.6ma	2.3ma

Maximum Power Dissipation

ON	OFF
94.0mw	31.0mw

Average Normal Power Dissipation

$$= \frac{\text{NOMINAL ON + NOMINAL OFF}}{2} = 47.0mw$$

General Wiring Rules (Far Printed Circuit Wire - 10 Mil Width Lines)

Tatal net length far AND extensians must nat exceed 18 inches. Total OR extensions must be less than 6 inches. Moximum net length ot either input ar output should be less than 60 inches, unless longer delays can be toleroted.